

What is Claimed is:

1. A projection lens family comprising a plurality of lens systems, each having a double-gauss base architecture with aspheric lens elements at the beginning and end of the lens system with a system stop therebetween and an acromatic lens element pair between each aspheric lens and the system stop.

2. A projection lens family according to claim 1 wherein the lenses vary in length within the projection lens family.

3. A projection lens family according to claim 2 wherein at least one of the lens systems is optimized for a system length of less than 1050 millimeters.

4. A projection lens family according to claim 1 wherein at least one of the lens systems is optimized with one or more lens elements added to the base architecture between the aspheric lens elements at the beginning and end of the lens system.

5. A projection lens family according to claim 1 wherein the directions of curvature for the lens elements do not change between the lens systems within the lens family.

6. A projection lens family according to claim 1 wherein the lens systems are optimized to provide maximum distortions varying from about 0.55% to about 0.30% and a Modulus Transfer Functions varying from about 0.48 to about 0.69.

7. A projection lens family according to claim 6 wherein the lens systems use from 6 to 9 lens elements.

8. A projection lens family according to claim 1 wherein the acromatic lens element pairs for at least one lens system are formed from a combination of inexpensive glass materials chosen from the group consisting of: SF14, SF15, BAK1, and BALF4.

9. A projection lens system comprising a double-gauss architecture with aspheric lens elements at the beginning and end of the lens system with a system stop therebetween and an acromatic lens element pair between each aspheric lens and the system stop.

10. A projection lens system according to claim 9 wherein the lens systems is configured to provide maximum distortion of less than about 0.55% and a Modulus Transfer Functions of at least about 0.48.

11. A projection lens system according to claim 10 wherein the acromatic lens element pairs for at least one lens system are formed from a combination of inexpensive glass materials chosen from the group consisting of: SF14, SF15, BAK1, and BALF4.

12. A projection lens system according to claim 10 wherein the lens system has at least six lens elements and no more than nine lens elements.

13. A projection lens system according to claim 9 further comprising an additional aspheric lens disposed between the aspheric lens at the beginning of the lens system and the acromatic lens between the aspheric lens at the beginning of the lens system and the system stop.

14. A projection lens system according to claim 9 further comprising an additional acromatic lens element pair disposed between the aspheric lens at the beginning of the lens system and the acromatic lens between the aspheric lens at the beginning of the lens system and the system stop.

15. A projection lens system according to claim 14 further comprising an additional aspheric lens disposed between the aspheric lens at the end of the lens system and the system stop and an additional acromatic lens disposed between the aspheric lens at the beginning of the lens system and the system stop.

16. A projection lens system according to claim 9 wherein the lens system is optimized for lenses that provide a system length of less than 10.50 millimeters.